

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-3. (Canceled)

4. (Previously Presented) A longitudinal type of thermal processing apparatus comprising:

a processing container made of quartz, having an opening part at a lower end thereof,
a lid provided under the opening part, capable of moving up and down so as to open and close the opening part,

a holder provided on the lid, capable of hold a plurality of objects to be processed in a tier-like manner, and

a heating unit provided around the processing container,
wherein

the lid has an inner lid part made of quartz that comes in contact with a lower-end surface of the opening part, and an outer lid part made of a metal that covers an outside surface of the inner lid part,

the lower-end surface of the opening part and an upper-end surface of the inner lid part, which come in contact with each other, are mirror-finished,

a first flange is provided at an outside periphery of the opening part,

the first flange is located higher than the lower-end surface of the opening part,

a second flange is provided at an outside periphery of the inner lid part,

the second flange is located lower than the upper-end surface of the inner lid part,

a flange holder is provided between the first flange and the second flange, and

a channel for vacuuming is formed by: an inner surface of the flange holder, a lower surface of the first flange, an upper surface of the second flange, an outer surface of the inner lid part from the second flange to the upper-end surface, and an outer surface of the opening part from the lower-end surface to the first flange.

5. (Withdrawn) A longitudinal type of thermal processing apparatus according to claim 4, wherein

the flange holder is made of a metal, and is provided on the first flange via a sheet made of a resin,

a first O-ring that seals between the first flange and the flange holder and a second O-ring that seals between the second flange and the flange holder are provided on the flange holder, and

the channel for vacuuming is formed by: the first O-ring, an inner surface of the flange holder from the first O-ring to the second O-ring, the second O-ring, an upper surface of the second flange inside the second O-ring, an outer surface of the inner lid part from the second O-ring to the upper-end surface, an outer surface of the opening part from the lower-end surface to the first flange, and a lower surface of the first flange inside the first O-ring.

6. (Withdrawn) A longitudinal type of thermal processing apparatus according to claim 5, wherein

a central opening part is formed at a central portion of the outer lid part,

a third flange of a rotation-introducing mechanism, which causes the holder to rotate, is fixed on a lower surface of the central opening part so as to close the central opening part,

a rotation shaft of the rotation-introducing mechanism extends upward from a central portion of the third flange,

a boss part that surrounds the rotation shaft is formed at a central portion of the inner lid part,

double third and fourth O-rings are provided between a lower-end surface of the boss part and an upper surface of the third flange, which come in contact with each other, and

a gas-discharging hole for vacuuming a space defined by the lower-end surface of the boss part, the upper surface of the third flange and the third and fourth O-rings is formed in the first flange,

7. (Withdrawn) A longitudinal type of thermal processing apparatus according to claim 6, wherein

the gas-discharging hole is connected to the channel for vacuuming.

8. (Canceled)

9. (Withdrawn) A longitudinal type of thermal processing apparatus according to claim 5, wherein

a plurality of patches made of a resin is screwed on the flange holder so as to come in contact with an outer-periphery surface of the first flange to form a predetermined gap between the flange holder and the first flange.

10-12. (Canceled)